Scientific Method Part 5: Communicating Practice (Demo Version)

Read each question carefully.

"Tree Growth Study"

The graph shows the heights of two trees over a period of eight years. The trees' heights were measured on the same day each year.

Tree Height Over Time

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1)   from "Tree Growth Study"

How should the results of this investigation be explained in writing?

A) Tree 1 received more water and nutrients than Tree 2.

B) Tree 2 grew just as fast as Tree 1 every year for eight years.

C) Tree 1 grew faster for the first seven years, but both trees were about 10 feet tall by the eighth year.

D) Tree 2 did not grow as fast as Tree 1, but Tree 2 will eventually grow several feet taller than Tree 1.

Scientific Method Part 5: Communicating Practice (Demo Version)

"Lorrie's Experiment: Water and Erosion"

Lorrie wanted to know how the force of water affects erosion. She guessed that sprinkling water onto a pile of dirt would cause more erosion than pouring water onto a pile of dirt. For her experiment, she built a pile of dirt 30 centimeters high. She poured one liter of water onto the pile and measured how many centimeters the pile lost in height. Then she sprinkled one liter of water onto the pile and measured it again. She did two trials. The table below shows her data.

Height Lost to Erosion

| Water Flow	Height Lost (cm)	
	Trial 1	Trial 2
sprinkled	2.5	2.5
poured	4.5	5.0

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2) from "Lorrie's Experiment: Water and Erosion"

How should she explain her results in writing?

A) When 2.5 liters of water is sprinkled onto a dirt pile, the dirt pile loses less height than when 4.5 liters of water is poured onto the pile.

B) When water is sprinkled onto a dirt pile, the pile loses at least 2.5 cm of height. When water is poured onto the dirt pile, the pile loses at least twice as much.

C) A dirt pile that is 30 cm high will lose at least 4.5 cm when water is poured on it. A smaller dirt pile will lose at least 2.5 cm when water is sprinkled on it.

D) In the first trial, the pile lost 2.5 cm when water was sprinkled on it and 4.5 cm when water was poured on it. In the second trial, the pile lost 2.5 cm when water was sprinkled on it and 5.0 cm when water was poured on it.

Scientific Method Part 5: Communicating Practice (Demo Version)

"Heat Conduction Experiment"

A student predicted that metal would conduct heat better than wood or glass. To test her idea, she collected one glass rod, one wooden rod, and one steel rod. She placed a wax bead on the top of each rod. Then she placed the rods into boiling water and recorded the time it took for the wax beads to begin melting. Her experimental setup and data are shown below.

Rod	Melt time (min:sec)
Glass	4:54
Wood	did not melt
Steel	1:34

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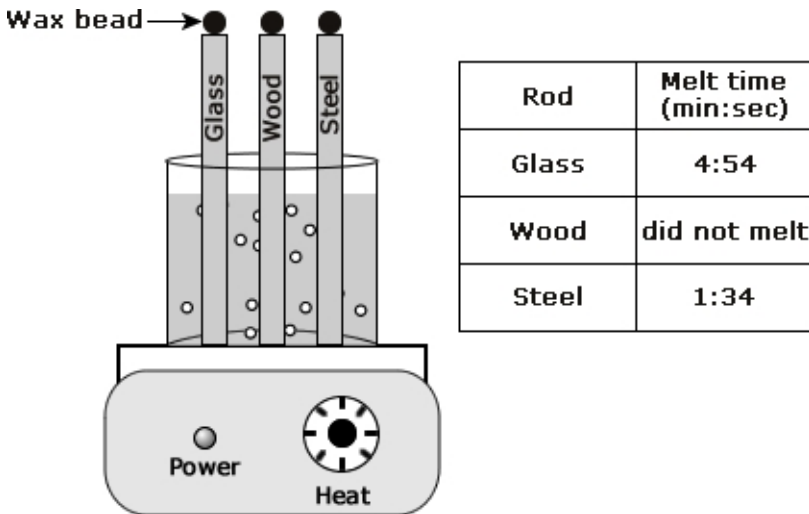
3)   from "Heat Conduction Experiment"

Which best explains the results in writing?

A) Wood is a poor conductor of heat, but glass and steel are both good conductors of heat.

B) Steel is the best metal for conducting heat, while glass and wood are both good insulators against heat.

C) Human-made materials such as glass and steel conduct heat better than natural materials such as wood.

D) The steel rod conducted heat better than the glass and wooden rods, and the glass rod conducted heat better than the wooden rod.

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4)   Stewart needs to make a graph to show how the brightness of a bulb affects how long it lasts.

Which type of graph should he use?

   A) bar graph

   B) pie chart

   C) line graph

   D) Venn diagram

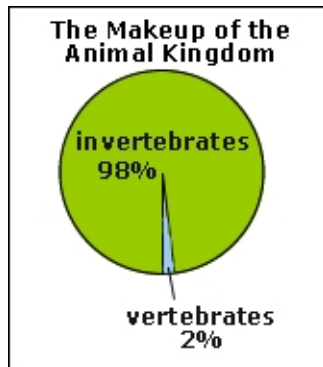5)   Riley needs to make a graph showing the ways in which series and parallel circuits are alike and different.

Which type of graph should she use?

   A) line graph

   B) pie chart

   C) bar graph

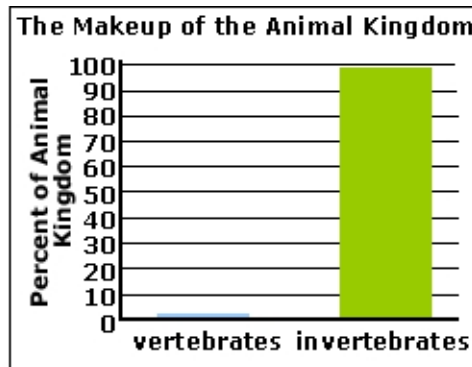   D) Venn diagram

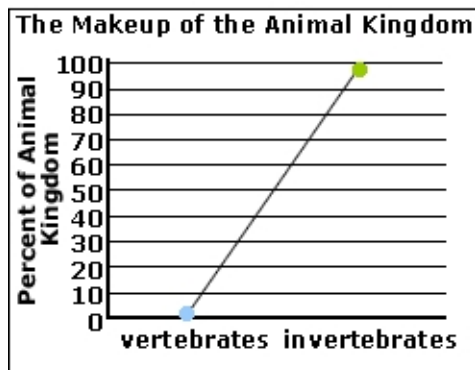6) Julio read that the Animal Kingdom is made up of 98% invertebrate animals and 2% vertebrate animals.

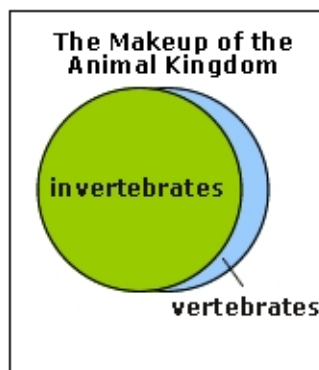Which graph should be used to represent this data?

Graph 1

Graph 2

Graph 3

Graph 4

A) Graph 1

B) Graph 2

C) Graph 3

D) Graph 4

7)

from "Lorrie's Experiment: Water and Erosion"

What type of graphic should she use to show her results?

A) bar graph

B) Venn diagram

C) line graph

D) pie chart

8) The table below shows the number of earthquakes in the United States in 2008 organized by magnitude.

   Which type of graph would best show this data?

   United States Earthquakes for 2008

Magnitude	Number
no magnitude	20
0.1 - 0.9	0
1.0 - 1.9	14
2.0 - 2.9	1579
3.0 - 3.9	1485
4.0 - 4.9	432
5.0 - 5.9	85
6.0 - 6.9	9
7.0 - 7.9	0
8.0 - 9.9	0

   A) line graph

   B) bar graph

   C) pie chart

   D) Venn diagram

9) Jenny needs to make a graph to show how three different soil temperatures affect bean plant growth.

   Which type of graph would best represent this data?

   A) bar graph

   B) pie chart

   C) line graph

   D) Venn diagram